# Technology Issues

A  Active Issues

A.1  Issue: Too much of the day-to-day operation depends on Chuck Miller.

A.1.1  Analysis: Chuck has taken too much responsibility onto himself.

A.1.2  Recommendations:

A.1.2.1 Document the IT infrastructure so someone else can administer it in case Chuck is "hit by a bus".  This will require an inventory of all IT equipment.  Keeping the inventory document up to date will require that each piece of IT equipment have a unique, visible, inventory number.

A.1.2.2 Document Chuck's procedures by following him around and writing down what he does.

A.1.3  Progress: Chuck is working on creating an inventory of the IT infrastructure.  Tim Hutchinson is helping Chuck.

A.2  Issue: The backup procedures risk non-public data being revealed.

A.2.1  Analysis: taking unencrypted disks home risks losing them.

A.2.2  Recommendations:

A.2.2.1  Encrypt all backup disks, using Microsoft Windows full-disk encryption.

A.2.2.2  Encrypt all backup tapes, using a technique not yet identified.

A.2.2.3  Store backup disks and tapes in a town-owned facility, under lock and key.  Encryption is still needed because disks and tapes can be mislaid during transit.

A.2.2.4  When choosing a site for backup, it must be separate from the site where the data is normally used, to protect the data from a single-site disaster.

A.2.2.5  Eventually, each site which houses Town data disks or tapes, whether for regular use, for backup, or both, must have a signin/signout log to record the departure and arrival of disks and tapes.  To make this work, each disk and tape must have a unique, visible, identifier.

A.2.3  Progress: Chuck now places off-line backup disks in a fire-resistant vault in Town Hall.  These backups include data from other Town sites.  Because Town data is generally public, there may not be a need for encryption.  There are plans to move half of the redundant SAN from Town Hall to the Police Station.  To accomplish this the Police Station must be cleaned up and a dedicated fibre needs to be installed between Town Hall and the Police Station.  There is no funding in the foreseeable future for adding another fibre link.  Workstations and most servers are backed up daily to NAS, except Finance is three times a day.  Only two servers still use tape.  Chuck will measure the utilization of the fibre link that connects Town Hall with the Police Station, the Central Fire Station and Waste Water.

A.3  Issue: The Town is spending a lot of money on software.

A.3.1  Analysis: Much of the software that the Town uses is licensed from vendors at a cost of about $80,000.  We have about 200 Microsoft Office licenses, of which about 150 might be converted to OpenOffice.  However, Microsoft Outlook communicates with the Town's Cicso telephone system, and there might be no replacement for this capability.  The Town also runs Revenue Sense and Budget Sense for payroll and purchasing.

A.3.2  Recommendation: follow the State's lead in moving to free software, as described in HB 418.  As licenses expire, convert desktops to OpenOffice, unless there is a good

reason why the particular desktop needs Microsoft Office. Chuck has already replaced Microsoft Office with OpenOffice on desktops which are not assigned to a particular person.

A.3.3 Progress: The Town Council is on-board with the concept of switching to free software. In some cases the available free software may not be the best solution for the Town's needs, so switching needs to be evaluated on a case-by-case basis. See the section below on Software Licenses. Chuck is seeing resistance to moving from Microsoft Office to OpenOffice. Apparently people don't like change. Chuck will get more detailed information about software costs, and we will look into Google Docs.

A.4  Issue: Chuck Miller, though he has much experience, is not able to handle some problems.

A.4.1 Analysis: Chuck lacks training in Microsoft Windows Server and Microsoft Exchange.

A.4.2 Recommendation: Offer Chuck training in Microsoft Windows Server Administration and Microsoft Exchange Administration.

A.4.3 Progress: the Committee has recommended to Eileen that $5,000 per year be budgeted for training, which would provide about two weeks of training per year. Chuck uses vendors for support.

A.5  Issue: There is no plan for the future of the Town's IT infrastructure.

A.5.1 Analysis: The Town's IT infrastructure has developed based on immediate needs— when something breaks we start thinking about how to replace it.

A.5.2 Recommendation: Develop short- medium- and long-term plans for the Town's IT infrastructure. This includes replacing workstations and servers as they reach end of life. Consideration should also be given to upgrading and replacing software.

A.5.3 Progress: The budget has $50,000 for a Capital Improvements account; Chuck already has plans for how to spend it.

B  Inactive Issues

B.1  Issue: There is no disaster recovery plan for the Town's IT infrastructure.

B.1.1 Analysis: In the absence of a formal plan, much effort will be wasted trying to recover from a disaster, and the recovery will likely be incomplete.

B.1.2 Recommendation: create a disaster recovery plan, which describes what to do if a single building is completely destroyed, with all its contents, and what to do if Chuck is "hit by a bus". The exercise of writing the plan may suggest some changes in the backup procedures.

B.1.3 Progress: Creating and maintaining a comprehensive disaster recovery plan is a major effort. This issue is inactive pending the resolution of other issues: IT inventory and training for Chuck Miller.

B.2  Issue: Town Hall has poor physical security.

B.2.1 Analysis: Too many people have door keys.

B.2.2 Recommendation: Replace door locks with RFID key cards. Each person has his own unique key card, which can be invalidated without having to get it back from him. Different people can have the authority to open different doors at different times.

B.2.3 Progress: there are 73 locked doors in Town Hall. Committee chairs no longer get keys to Town Hall. The Police Station has installed RFID key card locks. Upgrading just the eight Town Hall exterior locks would cost about $73,000 but would not provide

much added security due to the frequent use of Town Hall after hours.  This issue is inactive until and unless a less expensive option can be found.

B.3  Issue: The Town's network is at risk from intruders over the Internet.

    B.3.1  Analysis: Not all the points of contact between the Town's network and the Internet are adequately protected.  This includes the Police cruisers' access to Police through Comcast.

    B.3.2  Recommendations:

        B.3.2.1  At each point where any Town equipment interfaces to the Internet, provide a firewall which forbids any unauthorized messages.

        B.3.2.2  Where the Town is using the Internet to connect between Town facilities, make all traffic which pass between the Town facilities use a VPN.

    B.3.3  Progress: all communication between Town facilities that passes across the public Internet is tunneled through a VPN, using either a SonicWall appliance or OpenVPN software.  The Police office at Merrimack Premium Outlets is further protected by a router and VLAN.

# Software Licenses

## Microsoft software and anti-virus

A Client Access License (CAL) is required for a workstation to access a Microsoft Windows Server and participate in its security domain.  We have the needed 150 CALs.

An anti-virus product is required to protect workstations running Microsoft Windows from malware which exploits flaws in the operating system to destroy data or reveal non-public data.  We have 150 licenses for Symantec version 8.  It will cost money to upgrade to the current version of Symantic anti-virus, so this is an opportunity to switch vendors.  Chuck likes Eset Nod32, but the committee recommended he consider ClamAG, which is free.  According to its web site, Eset Nod32 costs $100 per year for 5 PCs, which would come to $3,000 per year for our 150 workstations.  Even so it is less expensive than Symantec Endpoint Protection Small Business Edition, which is $3,858 for one year of Basic Maintenance.

We use Microsoft Office and OpenOffice for document preparation, presentations, e-mail, spreadsheets and small data bases.  We have licenses for Microsoft Office 2003 and Microsoft Office 2010; no license is needed for OpenOffice.  Microsoft Office 2010 is set to save documents in Microsoft Office 2003 format.  Chuck attempted to move 50 of the 100 workstations that need e-mail to OpenOffice plus Microsoft Outlook, but encountered resistance.  Microsoft Outlook is the component of Microsoft Office which provides e-mail service; it is less expensive than full Microsoft Office.  Replacing Microsoft Outlook with a free alternative will be difficult because the available software for our Cisco telephones appears to support only Microsoft Outlook.

We use small data bases to hold data in an organized way, for example burn permits issued by the Fire Department.  We currently use Microsoft Access for these small data bases, but we could convert them to OpenOffice Base.  Conversion will need to be considered on a case-by-case basis.

Large data bases are currently handled by Microsoft SQL, for which we have 50 licenses.  Assessing has been converted to a less expensive version of Microsoft SQL, called Microsoft SQL Express.  The data bases in Finance are too large for Microsoft SQL Express.  In some cases conversion to a free data base product such as PostgreSQL might be possible.

Terminal Services allows remote computers to connect to the Microsoft Windows servers at Town Hall as though they were local.  We currently have 50 licenses.  We may need fewer licenses in the future when the Fire Department converts to their new software, which uses HTTP to access its server rather than Terminal Services.  However, that conversion has been delayed.

## Revenue Sense and Budget Sense

These are very expensive software packages used by the Finance Department for payroll and purchasing.  The current versions require Microsoft SQL 2008 and Microsoft Windows Server 2008, which are also expensive.  The total cost of upgrading to the current versions of these products is about $12,000.